REMARKS

1. Interview Summary

Applicant thanks the Examiner for conducting an After-Final Interview on April 20, 2007. Below follows a brief summary of the substance of the Interview.

The Applicant wished to better appreciate the Examiner's interpretation of *Ahn et al.* (U.S. Patent 6,346,367), hereinafter *Ahn*, and *Mizuno* (U.S. Patent 6,421,307), hereinafter *Mizuno*. The general background of the formation of grooves and land pre-pits was discussed. The current amendments to the claims and the response herein were prepared in light of the interview which greatly facilitated the Applicants in their understanding of the Office Action and the interpretation of *Ahn* and *Mizuno*. In view of the helpful comments provided by the Examiner, it is believed that the amendments place the pending claims in condition for immediate allowance.

2. Rejections Under 35 U.S.C. § 103(a)

In the Office Action, claims 1-3, 7, and 10-14 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Ahn et al.* (U.S. Patent 6,346,367), hereinafter *Ahn*, in view of *Mizuno* (U.S. Patent 6,421,307), hereinafter *Mizuno*. It is well-established at law that, for a proper rejection of a claim under 35 U.S.C. § 103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, *e.g.*, *In re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

a. Features of Independent Claims 1, 11, and 12

Claim 1 is a method for cutting a photoresist-coated glass board comprising "intermittently projecting a first laser beam to form a groove onto the photoresist-coated glass board" and "intermittently projecting a second laser beam to form land pre-pits in synchronism with blocking the first laser beam." Claim 11 is a

method for manufacturing an optical recording medium comprising "intermittently projecting a first laser beam to form a groove onto the photoresist-coated glass board" and "intermittently projecting a second laser beam to form land pre-pits in synchronism with blocking the first laser beam." Claim 12 is a method for cutting a photoresist-coated glass board comprising "intermittently projecting a first laser beam to form a groove onto the photoresist-coated glass board" and "intermittently projecting a second laser beam to form land pre-pits in synchronism with blocking the first laser beam onto the photoresist-coated glass board."

In the various embodiments, the first laser beam is projected to form a ***groove*** and the second laser beam is projected to form a ***land pre-pit*** (while the first laser beam is blocked). The Examiner is respectfully referred to paragraphs 0006-0007 and Figures 1-3 of the instant application (U.S. Publication No. 20040089637). Paragraphs 0006-0007 are repeated below for the convenience of the Examiner (emphasis added):

> [0006] The ***groove*** formed on the substrate of a write-once optical recording medium or a data rewritable type optical recording medium wobbles in the radial direction of the optical recording medium at a predetermined cycle. Therefore, when data are to be recorded, it is possible to maintain the linear recording velocity constant irrespective of the position in the radial direction of the optical recording medium by generating a synchronization signal for the rotation servo of the spindle motor based on the detected wobble signal (WO signal).
>
> [0007] Further, a number of pits called "***land pre-pits***" are formed in a land region between neighboring grooves in the manufacturing process and when data are to be recorded in the optical recording medium, the address of a recording area is identified based on a land pre-pit signal obtained from the land pre-pits. A *land pre-pit* normally contains the *address of the groove* located on the inner circumference side thereof and is formed on the outer circumference side of a position (inflection point) where the groove wobbles to the most outer circumference side. Therefore, when data are to be recorded, the address of the groove which is being irradiated with the laser beam can be identified by extracting a land pre-pit signal obtained from the land pre-pit located on the outer circumference side with respect to the spot center of the laser beam.

Accordingly, the process of manufacturing an optical recording medium employs forming a groove with land pre-pits which provide address information

pertaining to the groove. It is appreciated that an optical recording medium having the formed groove and land pre-pits does not have data written thereon. The data is written onto the optical recording medium *at a later time*. That is, the optical recording medium is initially unrecorded, blank, or the like.

On a write-once type optical recording medium, at some later point in time, the data is written onto the optical recording medium by forming a data mark on the recording medium residing in the groove. Data marks may take the form of an "information pit" or the like. For example, users may store selected data onto the optical recording medium (such as a data CD) from their PC. As another example, a vendor may store a movie onto the optical recording medium (such as a DVD). Information may be stored onto the optical recording medium using a laser system or the like which adds data marks (information pits) into the already-formed groove with land pre-pits, where the projected laser beam modifies the material of the recording layer residing in the already-formed groove with land pre-pits.

In other types of optical recording media, data marks (information pits) are formed on the optical recording media during the manufacturing process (for example, see *Ahn* which discloses an information pit with a projection 122 therein). In this type of optical recording media, grooves and land pre-pits, if present, and information pits are directly formed onto the optical medium during manufacturing. In this type of medium, data is not added to the optical recording medium at a later time.

Finally, the previously written data may be retrieved, or read, from the optical recording medium. To read the stored data from the optical recording medium, a laser beam system or the like is projected onto the grove of the optical recording medium such that light is reflected back from the groove. This returning light is then detected by an optical light detector, such as a photo-diode or the like (for example, see *Mizuno*). The detected return light, reflected back from the optical recording medium, is analyzed to determine the presence or absence of a data mark (such as an information pit) residing in the groove. Thus, return light from the optical recording medium allows the data to be retrieved from the optical recording medium.

b. First Argument for Allowability of Independent Claims 1, 11, and 12

Claim 1 is allowable for at least the reason that the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for cutting a photoresist-coated glass board comprising "*intermittently projecting* a *first laser beam* to form a groove onto the photoresist-coated glass board" and "*intermittently projecting* a *second laser beam* to form land pre-pits *in synchronism with blocking the first laser beam*" as recited in claim 1 (emphasis added). That is, when the second laser beam is projected to form the land pre-pits, the first laser beam is blocked. The formed land pre-pit 131 is illustrated in Figures 3a-3d of the present Application.

Similarly, claim 11 is allowable for at least the reason that the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for manufacturing an optical recording medium comprising "*intermittently projecting* a *first laser beam* to form a groove onto the photoresist-coated glass board" and "*intermittently projecting* a *second laser beam* to form land pre-pits *in synchronism with blocking the first laser beam*" as recited in claim 1 (emphasis added). Claim 12 is allowable for at least the reason that the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest a method for cutting a photoresist-coated glass board comprising "*intermittently projecting* a *first laser beam* to form a groove onto the photoresist-coated glass board" and "*intermittently projecting* a *second laser beam* to form land pre-pits *in synchronism with blocking the first laser beam* onto the photoresist-coated glass board" as recited in claim 12 (emphasis added).

Ahn does not disclose, teach, or suggest *intermittently* projecting a first laser beam and a second laser beam such that the first laser beam is blocked when the second laser beam is projected. In contrast, *Ahn* discloses a system where two laser beams LB1 and LB2 are *concurrently* projected onto the optical recording medium (column 3, lines 20-30) such that the projection 122 is formed in an information pit. *Ahn* Figure 5B illustrates the projection 122 resulting from the concurrently projected laser

beams LB1 and LB2. In order to form the projection 122, both *Ahn* beams LB1 and LB2 must be concurrently projected onto the optical recording medium.

Mizuno also fails to disclose the above-recited features of claims 1, 11, or 12. *Mizuno* discloses a system for analyzing return light from an optical recording medium with data marks stored onto the grove of the optical recording medium. That is, the optical recording medium of *Mizuno* has already been formed with the groove and land pre-pits thereon, and has already had data recorded in the groove. *Mizuno* is merely reading the recorded data by analysis of the return light LR.

Mizuno Figure 1 shows "an example of a conventional optical pickup 81 that is exclusively used for reproducing a compact disc (CD). This optical pickup 81 comprises a semiconductor laser 82, a diffraction grating 83, a beam splitter plate 84, an objective lens 85 and a light-receiving element 86 composed of a photo-diode. A laser light L from the semiconductor laser 82 is reflected on the beam splitter plate 84, converged by the objective lens 85 and thereby irradiated on an optical disk 90. A returned light reflected on the optical disk 90 is traveled through the objective lens 85 and the beam splitter plate 84 and received and detected by the light-receiving element 86" (column 1, lines 25-36, emphasis added). In *Mizuno* "*returned* light LR from the pit P is converged by the objective lens 3, a knife edge KE is located at the confocal position of the returned light and a returned light split by the knife edge KE is detected by the right-hand side and left-hand side quadrant photo-detectors PD_R ... and PD_L ... . Incidentally, FIG. 11B is a diagram showing the right-hand side portion of FIG. 11A in an enlarged-scale, and illustrates the state in which the returned light that was converged up to the diffraction limit is split by the knife edge" (column 10, lines 7-18, emphasis added). Nowhere does *Mizuno* disclose any type of first and second laser beams which are *intermittently projected in synchronism with each other* such that the first laser beam *is blocked* when the second laser beam is projected to form the land pre-pit.

Considering both references in combination, even if the *Ahn* system *is modified* by the *Mizuno* optical disk reading system, at most, a return beam of light reflected from the optical recording medium would be split and then analyzed as

disclosed by *Mizuno*. Even after the *Ahn* system *is modified* by the *Mizuno* system, both *Ahn* laser beams LB1 and LB2 would still be concurrently projected.

Alternatively, even if the *Ahn* system *is modified* by *Mizuno* to block one of the projected beams LB1 and LB2, then the blocking of one of the beams would result in formation of a data mark (information pit) that does not have the requisite projection 122. According to the disclosure of *Ahn*, the projection 122 is an essential feature of *Ahn*. In the absence of the projection 122, it appears that the *Ahn* apparatus would fail and not work as intended. Accordingly, it is not permissible to modify *Ahn* using *Mizuno* in the above-described manner pursuant to MPEP § 2143.02, entitled "THE PROPOSED MODIFICATIONS CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE," which states that "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." (Further, Applicants note that *Mizuno* is limited to disclosing blocking portions of return light reflected from an optical recording medium, and completely fails to disclose blocking any type of *projected* beam.) Because the principle of operation of *Ahn* after modification by *Mizuno* would be changed (the projection 122 is absent), a *prima facie* case of obviousness cannot be established under the above-described scenario wherein *Ahn* is modified by *Mizuno*.

Accordingly, the proposed combination of *Ahn* in view of *Mizuno* does not teach at least the recited features of "*intermittently projecting* a *first laser beam* to form a groove onto the photoresist-coated glass board and *intermittently projecting* a *second laser beam* to form land pre-pits in synchronism with blocking the first laser beam." Therefore, a *prima facie* case establishing an obviousness rejection by *Ahn* in view of *Mizuno* has not been made. Thus, claims 1, 11, and 12 are not obvious under the proposed combination of *Ahn* in view of *Mizuno*. Accordingly, the rejection should be withdrawn for at least this first reason alone.

c. Second Argument for Allowability of Independent Claims 1 and 11

Second, the proposed combination of *Ahn* in view of *Mizuno* does not disclose, teach, or suggest at least the features of "intermittently projecting a first laser beam *to form a groove* onto the photoresist-coated glass board and intermittently projecting a second laser beam *to form land pre-pits* in synchronism with blocking the first laser beam" as recited in claims 1, 11 and 12 (emphasis added). That is, neither *Ahn* or *Mizuno* disclose forming grooves or land pre-pits in an optical recording medium.

Ahn discloses that the two laser beams LB1 and LB2 are projected to form "information pits 12 recessed from a reference surface 11 by a predetermined depth, and a projection 122 is formed in a respective information pit 12. The projection 122 projects with respect to a bottom surface 121 of the information pit 12. The projection 122 rises to a height which is lower than the reference surface 11, and divides the information pit 12 into two u-shaped cross-sections" (column 2, lines 51-58). This is quite different from forming the groove (using the first laser beam) and forming the land pre-pit (using the second laser beam while the first laser beam is blocked).

Mizuno does not disclose the above-recited features of claims 1, 11, or 12. As noted above, *Mizuno* discloses an "optical device for use in receiving and detecting a returned light reflected from an irradiated portion by irradiating a light from a light-emitting portion, for example, on the irradiated portion of an optical recording medium such as an optical disk, a phase-change type optical disk and so on" (column 1, lines 6-10, and Figures 1 and 2B). *Mizuno* further discloses a "confocal knife edge arrangement (hereinafter referred to as CKE arrangement), as shown in FIGS. 11A and 11B, although the *returned light L_R is split in the right and left directions* by the knife edge KE formed of a pyramid mask located at the confocal position, it is clear from FIGS. 12 and 13 that the changes of the patterns relative to the detracks on the respective separated sides (hereinafter referred to as channels) approximately conform to the changes of the patterns of the prior-art type (structure without knife edge based on the semiconductor structure of triangular pyramid shape; the landing position of each diffracted light is seen in FIG. 20) shown in FIG. 21" (column 10, lines 19-30, emphasis added). Accordingly, at most, the

returned light is split in the *Mizuno* optical *disk reader* system. Thus, *Mizuno* fails to disclose the missing elements from *Ahn* that are part of the Applicants' claimed invention.

Considering both references in combination, even if the *Ahn* system *is modified* by the *Mizuno* optical disk reading system, at most, the modified *Ahn* system would still be limited to disclosing only the recording of data marks (information pits). That is, there is nothing in *Mizuno* that teaches forming grooves and/or land pre-pits on the optical type recording media.

Accordingly, the proposed combination of *Ahn* in view of *Mizuno* does not teach at least the claimed limitations of "intermittently projecting a first laser beam *to form a groove* onto the photoresist-coated glass board and intermittently projecting a second laser beam *to form land pre-pits* in synchronism with blocking the first laser beam" as recited in claims 1 and 11. Therefore, a *prima facie* case establishing an obviousness rejection by *Ahn* in view of *Mizuno* has not been made. Thus, claims 1, 11, and 12 are not obvious under proposed combination of *Ahn* in view of *Mizuno*. Accordingly, the rejection should be withdrawn for at least this reason alone.

d. Claims 2, 3, 7, 10 and 13-14

Because independent claim 1 is allowable over the cited art of record, dependent claims 2, 3, 7 and 10 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that the dependent claims 2, 3, 7 and 10 contain all elements of independent claim 1. Similarly, because independent claim 12 is allowable over the cited art of record, dependent claims 13 and 14 (which depend from independent claim 12) are allowable as a matter of law for at least the reason that the dependent claims 13 and 14 contain all elements of independent claim 1. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Accordingly, the rejection to these claims should be withdrawn.

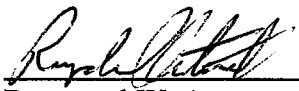
2. Conclusion

No fee for additional claims is due by way of this Amendment. The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090. Claims 1-3, 7, and 10-14 remain pending. No new matter has been added to the application.

In light of the above remarks, Applicants respectfully submit that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that all pending claims 1-3, 7, 10-14 are allowable. Applicants, therefore, respectfully request that the Examiner reconsider this application and timely allow all pending claims. The Examiner is encouraged to contact Mr. Armentrout by telephone to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, he is further encouraged to contact Mr. Armentrout by telephone to expediently correct such informalities.

Respectfully submitted,

SEED Intellectual Property Law Group PLLC



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